

element positioned in an evacuated or insulated chamber adjacent to the vessel and thermally linked to a cooling source; and

rotating the superconducting element to induce rotation in the magnetic pumping or mixing element in the vessel.

Please amend claim 117 as follows:

117. (Amended) A method of levitating and rotating a magnetic pumping or mixing element for pumping or mixing a fluid, comprising:

C² placing the magnetic pumping or mixing element in the vessel;

levitating the magnetic pumping or mixing element in the vessel using a superconducting element; and

rotating the magnetic pumping or mixing element using a driving magnet positioned adjacent to and concentric with the superconducting element.

Please amend claim 123 as follows:

123. (Amended) A method of levitating and rotating a magnetic pumping or mixing element for pumping or mixing a fluid in a vessel, comprising:

C³ placing the magnetic pumping or mixing element in the vessel;

levitating the magnetic pumping or mixing element using a superconducting element positioned in an evacuated or insulated chamber adjacent to the vessel and thermally linked to a cooling source;

rotating the magnetic pumping or mixing element in the vessel; and

moving the superconducting element relative to the vessel,
whereby the rotating magnetic pumping or mixing element follows the
movement of the superconducting element to ensure that effective, non-localized pumping
or mixing action is provided.

Please amend claim 131 as follows:

131. (Amended) A system for pumping or mixing a fluid in a vessel, comprising:

C4 a magnetic rotor or impeller for placement in the vessel, either before or after
the fluid is introduced, said rotor or impeller including at least one pair of alternating polarity
driven magnets;

at least one superconducting element for levitating said magnetic rotor or
impeller and forming a magnetic coupling with said alternating polarity driven magnets;

a cryostat including an evacuated or insulated chamber in which the
superconducting element is positioned, said chamber thermally isolating the superconducting
element from the vessel;

a cooling source thermally linked to said superconducting element; and

a motive device for rotating said superconducting element to induce rotation
in the levitating impeller or rotor via the magnetic coupling.

Please amend claim 152 as follows:

C5 152. (Amended) A method of levitating and rotating a magnetic pumping or mixing
element for pumping or mixing a fluid, comprising:

placing the magnetic pumping or mixing element in the vessel;

levitating the magnetic pumping or mixing element using a superconducting element; and

forming a magnetic coupling between the pumping or mixing element and the superconducting element;

rotating the superconducting element to induce rotation in the magnetic pumping or mixing element in the vessel as a result of the magnetic coupling.

Please add new claims 161-163:

161. (New Claim) A system for intended use in pumping or mixing a fluid in a vessel using a rotor or impeller capable of producing a non-symmetrical magnetic field, comprising:

at least one superconducting element capable of being field cooled for levitating and coupling with the magnetic rotor or impeller;

a cryostat for receiving the superconducting element and capable of maintaining the superconducting element in a field cooled state while thermally isolating the superconducting element; and

a motor for rotating the superconducting element,

whereby the magnetic rotor or impeller may be rotated in the vessel in a non-contact fashion as a result of the combined levitational and rotational forces supplied by the superconducting element when field cooled.

162. (New Claim) The system according to claim 161, wherein the cryostat includes

an evacuated chamber in which the superconducting element is at least partially received.

163. (New Claim) The system according to claim 161, wherein the motor rotates the cryostat and the superconducting element together.
